

What is claimed is:

1 1. A mobile communication system comprising:
 2 a first user terminal;
 3 a plurality of platforms in communication with said first user terminal
 4 to transfer a plurality of communication signals therebetween;
 5 a gateway station in communication with said plurality of platforms for
 6 transferring said plurality of communication signals therebetween; and
 7 a processing center in communication with said gateway station, said
 8 processing center determining a polystatic triangulation position for said first user
 9 terminal and redirecting a satellite beam in response to said determined position of
 10 said first user terminal.

1 2. The system as recited in claim 1, further comprising:
 2 a customer network in communication with said processing center, said
 3 customer network relaying communication signals between said first user terminal and
 4 a second user terminal.

1 3. The system as recited in claim 2, further comprising:
 2 a center network in communication with said processing center, said
 3 center network transferring said plurality of communication signals between said first
 4 user terminal and an Internet.

1 4. The system as recited in claim 1, wherein the mobile
 2 communication system is configured such that all of said plurality of communication
 3 signals are aggregated at said gateway station.

1 5. A mobile communication system comprising:
2 a stratospheric platform having stratospheric platform operations,
3 including creating a plurality of beams within a coverage area, a first beam being
4 directed to at least one user terminal at a first microcell and a plurality of additional
5 beams illuminating microcells immediately adjacent said first microcell;
6 a gateway station transmitting a first ranging signal and a third ranging
7 signal to said at least one user terminal via a first platform, having a first known
8 location and transmitting a second ranging signal and a fourth ranging signal to said at
9 least one user terminal via a second platform having a second known location;
10 said at least one user terminal retransmitting said first ranging signal
11 and said third ranging signal back to said gateway station via said first platform and
12 retransmitting said second ranging signal and said fourth ranging signal back to said
13 gateway station via a third platform, having a third known location; and
14 a processing center in communication with said gateway station
15 determining a first, a second, a third, and a fourth delay corresponding to time
16 differences between transmission and receipt of said first ranging signal, said second
17 ranging signal, said third ranging signal, and said fourth ranging signal respectively;
18 said processing center determining a first position of said user terminal
19 in response to said first known location, said second known location, and said third
20 known location as well as said first delay and said second delay;
21 said processing center determining a second position, different from
22 said first position, in response to said first known location, said second known
23 location, and said third known location as well as said third delay and said fourth
24 delay, thereby determining movement of said at least one user terminal;

25 said processing center signaling said stratospheric platform via said
26 gateway station to redirect said first beam from said first microcell to a second
27 microcell, in response to said movement.

1 6. The system as recited in claim 5, wherein said first beam is
2 redirected from said first microcell to a second microcell, which is located adjacent to
3 and different from said first microcell.

1 7. The system as recited in claim 5, further comprising:
2 a customer network in communication with said processing center, said
3 customer network relaying communication signals between a plurality of user
4 terminals.

1 8. The system as recited in claim 5, further comprising:
2 a center network in communication with said processing network.

1 9. The system as recited in claim 8, wherein said center network is
2 in communication with an Internet or Intranet.

1 10. The system as recited in claim 5, wherein said stratospheric
2 platforms are replaced by a first satellite, a second satellite, or a third satellite, which
3 perform the respective satellites operations in addition to said stratospheric platform
4 operations.

1 11. The system as recited in claim 5, wherein said processing center
2 measures the strength of a signal received from said at least one user terminal and

3 signals said stratospheric platform to redirect said first beam from said first microcell
4 to a second microcell, in response to said signal received.

1 12. The system as recited in claim 5, wherein the mobile
2 communication system is configured such that all communication signals are
3 aggregated at said gateway station.

1 13. A method of determining a position of at least one user terminal
2 within a mobile communication system, which includes a plurality of satellites having
3 known locations respectively and a gateway station, said method comprising:

4 transmitting and receiving a plurality of communication signals
5 between said plurality of satellites and said at least one user terminal;

6 transmitting and receiving said plurality of communication signals
7 between said plurality of satellites and a gateway station;

8 determining a position of said at least one user terminal through the use
9 of polystatic triangulation;

10 redirecting a beam of a satellite in response to said determined position
11 of said at least one user terminal.

1 14. The method as recited in claim 13, further comprising:

2 transmitting and receiving said plurality of communication signals to
3 and from a customer network.

1 15. The method as recited in claim 13, further comprising:

2 transmitting and receiving said plurality of communication signals to
3 and from a center network.

1 16. A method of determining a position of at least one user terminal
2 within a mobile communication system, which includes a first, a second, and a third
3 satellite having a first, a second, and a third known location respectively, said method
4 comprising:

5 creating a plurality of beams within a coverage area, a first beam
6 directed at the at least one user terminal in a first microcell and a plurality of
7 additional beams illuminating microcells immediately adjacent said first microcell;

8 transmitting a first ranging signal and a third ranging signal to the at
9 least one user terminal via the first satellite;

10 transmitting a second ranging signal and a fourth ranging signal to the
11 at least one user terminal via the second satellite;

12 retransmitting said first and said third ranging signals back to a gateway
13 station via said first satellite;

14 retransmitting said second and said fourth ranging signals back to said
15 gateway station via a third satellite;

16 determining a first delay, a second delay, a third delay, and a fourth
17 delay corresponding to time differences between transmission and receipt of said first
18 ranging signal, said second ranging signal, said third ranging signal, and said fourth
19 ranging signal respectively;

20 determining a first position of the at least one user terminal in response
21 to said first known location, said second known location, and said third known
22 location and said first delay and said second delay;

23 determining a second position of the at least one user terminal in
24 response to said first known location, said second known location, and said third
25 known location and said third delay and said fourth delay;

26 determining movement of the at least one user terminal in response to
27 said first position and said second position; and
28 redirecting, in response to said movement, said first beam from said
29 first microcell to a second microcell.

1 17. The method as recited in claim 16, further comprising:
2 relaying communication signals between a plurality of user terminals.

1 18. The method as recited in claim 16, further comprising:
2 transferring communication signals between said plurality of user
3 terminals and an Internet or intranet connection

1 19. The method as recited in claim 16, further comprising:
2 a gateway station in communication with each of said first satellite said
3 second satellite, and said third satellite.

1 20. The method as recited in claim 16, further comprising:
2 a stratospheric platform for creating said plurality of beams.